

## Local Warnings Against Tornadoes.

I have lately examined with some care the excellent compilation by Sergeant Finley, of the Signal Service, "Characteristics of Six Hundred Tornadoes," with reference to the question of devising a simple apparatus for saving human life. Saving property seems to be out of the question, as no structure can withstand the force of the tornado-wind. Life may be saved by recourse to underground shelters, cellars, etc., such as have actually been built in many places for this end. Two facts may be quoted from the work named: First—Three hundred and forty-seven out of three hundred and ninety-three tornadoes (that is, eighty per cent.) originated between the west and the south southwest points; Second—The average velocity of progression was about one mile in two minutes. . . . If five minutes' warning could have been given at any of the late tornadoes, many lives might have been saved. If each household could be warned by the continuous ringing of a bell, for example, that a wind of destructive force (say seventy miles per hour and upward) was approaching, and that five minutes were available in which to seek shelter, this would be well worth doing.

I have found that it is practicable to erect, at a moderate expense, (less than \$500), an apparatus which would give from three to five minutes' warning to all the inhabitants of a small town, by the firing of a cannon, for instance; and in addition, and without any increased expense, this apparatus could ring a bell in every house. The additional expense to each house would be less than ten dollars, the cost of maintenance would be less than one hundred dollars a year, and the work would be done by an intelligent person. The system, for a small town, would be something like the following: Suppose a circle described about the town with a radius of from two to two and one-half miles. The only serious danger from tornadoes is to be feared from the part of this circle between the west point and the southwest point. Along the circumference of this circle, between the south-southwest and west points, run a line of single telegraph-wire on twenty posts to the mile, and from the west point bring the wire into the town, letting it end at the telegraph office. It is grounded at each end of the line, and at the telegraph office it is connected with a battery, which sends a constant current over the line. Within the town, connection is made in various houses with magnets. Each magnet holds a detent, which prevents a bell from being rung by the action of a cheap clock-work governed by a coiled spring. If the circuit is broken anywhere in the line, each bell begins to ring, and continues to sound till its spring is run down; for four or five minutes for example. A cannon could be fired by a simple device, which would warn persons in the fields, etc., to seek shelter. In a large town the circuit might end in one of the engine-houses of the fire department, and ring a bell there. This would be the signal for the man on watch to repeat the warning simultaneously through as many local circuits as desirable.

It remains to indicate the way in which the circuit is to be broken by the wind. The circuit of telegraph poles from the south-southwest to the west points would contain about fifty poles. On every one of these the wire would run first to an insulator, then to an iron horizontal axis screwed into the side of the post. On this axis a piece of board one foot square can revolve freely. An iron rod projects below this board, and from the lower end of it a small wire goes to a pin in the telegraph-pole. This pin is connected by wire to a second insulator. From this the line goes to the next pole, and so on. The circuit ordinarily passes to the first insulator, thence to the iron rod, thence down the iron rod to the thin wire, through the pin to the second insulator, and so to the next telegraph-pole. The thin wire is a necessary part of the circuit. It is so made that it will break when the pressure of the wind on the square board is fifty pounds. The apparatus for each post is tested practically before it is set up. This can be done at any time in a simple manner. Whenever any single one of these boards is subjected to the pressure of fifty pounds, its wire will be ruptured, and the circuit will be broken, thus sending the necessary warning along the whole line. I have made one such indicator, which is connected with a small bell in this observatory. The wire is arranged so that it breaks at a wind-velocity of about ten miles per hour, and it works in a perfectly successful manner. The extension of the system for the protection of a small town is a simple matter. For a large city a more expensive system would have to be provided, as the wires between poles should be carried underground to protect them from the danger of disturbance.—Prof. Holden, in Science.

—At the Dal Verme Theatre, at Milan, the other night, an American named Shepherd created a great sensation by appearing with a luminous scarf pin, which was nothing more or less than a tiny electric lamp, warranted to go for five hours, by means of a small generator concealed in the waistcoat pocket.

—Mr. Ropp, arrested for killing a horse belonging to Mr. George, near Burbank, O., plead guilty to the charge willingly, on condition that the horse be valued at \$34.99. The missing cent from an even \$35 saved him from the penitentiary, and he escaped with \$20 and forty days.—Detroit Post.

—A Woman (Miss) man married his sister's daughter.—St. Paul Pioneer.

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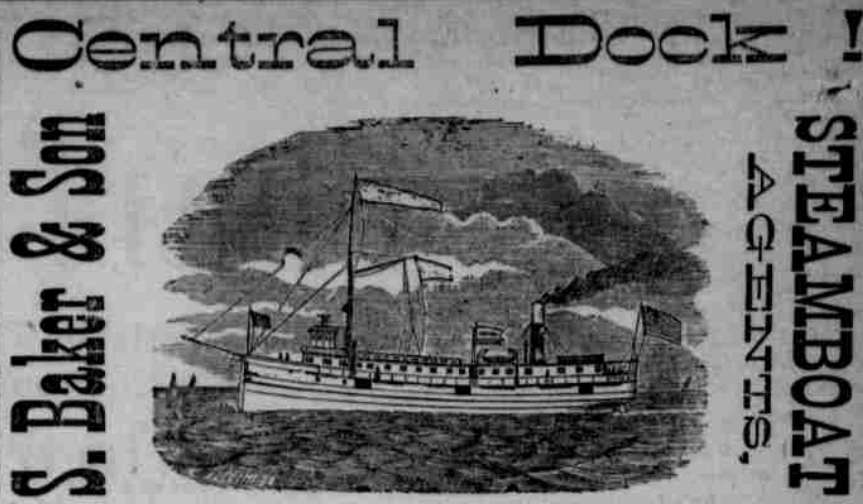
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